

Appl. No. 09/868,289
Amdt. dated December 19, 2005
Reply to Office Action of November 2, 2005

REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

Claims 20-26, 28-32, 34-38, 40, 44, 46-48, and 50 are pending in the application with claims 1-19, 27, 29, 33, 39, 41-43, 45, and 49 having been canceled, and claims 34-38, 40, 44, and 46-48 having been currently amended. Entry of these amendments is respectfully requested as it is believed they put the application in condition for allowance or in better condition for appeal.

Claims 33-41 and 43-50 have been rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. According to the Examiner: "The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Specifically, according to the Examiner:

"Applicants have failed to provide adequate support for specifying that the processes of claims 33 and 50 are conducted at ambient conditions. Firstly, despite applicants' response at page 14 of the remarks submitted May 5, 2005, there is no mention of ambient conditions at page 15, lines 4-5 of the specification. Secondly, the only recitation of ambient pressure and temperature within the specification has been found in connection with Examples 1 and 2; therefore, support for the ambient conditions language is only present for compositions that correspond to Examples 1 and 2. However,

since applicants have failed to identify the compositions of ADIPRENE LF750D and BYK A530, it cannot be determined how these components correspond to the claims."

This ground of rejection is respectfully traversed. Claims 39, 41, 43, 45, and 49 have been canceled.

The first sentence of Example 1 states, "The following components are combined in a closed vessel at ambient pressure and temperature."

The first sentence of Example 2 states, "The components identified below are combined analogously to the methods described in example 1 to produce an homogenous mixture."

The third sentence of Example 3 states, "The mixtures are allowed to cure at ambient conditions for 16 hours."

Thus, all of the examples are directed to curing at "ambient conditions." Those of ordinary skill in the art, upon reading these examples in combination with the disclosure of the specification that reads, "The present invention is drawn to a still further embodiment of a process for curing a poly urethane/urea-forming composition comprising contacting said poly urethane/urea-forming composition at a temperature between 15 and 35°C with (a) an aromatic amine curative having at least two primary amine groups, and (b) a plasticizer having a vapor pressure of less than 100 mPa at 25°C with said poly urethane/urea-forming composition," would be fully aware that the ambient conditions of the examples were preferred conditions within the disclosed 15-35°C temperature range.

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Further, ADIPRENE LF750D has been identified in the specification in the eighth paragraph under DETAILED DESCRIPTION OF THE INVENTION as a commercially available prepolymer of toluene diisocyanate and a polyol or polyol blend. Additionally, BYK A530 is identified in Example 1 as a degassing aid. Persons skilled in the art would have no difficulty obtaining or learning more about these market-available products.

Accordingly, it is requested that the rejection of claims 33-41 and 43-50 under 35 U.S.C. 112, first paragraph, be withdrawn.

Claim 49 has been rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 6-16767.

This rejection has been rendered moot by the cancellation of claim 49.

Accordingly, it is requested that the rejection of claim 49 under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over JP 6-16767, be withdrawn.

Claims 33-36, 39, 41, 43, and 45 have been rejected under 35 U.S.C. 103(a) as being unpatentable over JP 6-16767.

Claims 33, 39, 41, 43, and 45 have been canceled. Claims 34-36 have been amended so as to be dependent upon claim 50, to which this rejection has not been applied.

Accordingly, it is requested that the rejection of claims 33-36, 39, 41, 43, and 45 under 35 U.S.C. 103(a) as being unpatentable over JP 6-16767 be withdrawn.

Claims 20-26, 28, 30-32, 37, 38, 40, 44, 46-48, and 50 have been rejected under 35 U.S.C. 103(a) as being unpatentable over JP 6-16717 in view of Singh et al. ('371) and further

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in view of Rizk et al. ('860), Peter ('258), and Gabbard et al. ('956).

JP 6-16717 discloses a reaction injection molding type polyurethane based elastomer forming composition, comprising a liquid A comprising 100 parts by weight of an urethane prepolymer (1) derived from a tolylenediisocyanate (a) and a potyoxytetramethyleneglycol (b) containing 2.0-8.0 wt.% of isocyanate group having isocyanate group on the terminal, and a liquid B comprising 5-20 parts by weight of an aromatic diamine chain extender (2) having a molecular weight of 110-500, 5-115 parts by weight of a plasticizer (3) and 0.05-5 parts by weight of a catalyst (4) which accelerates chain extension, wherein the viscosity of the liquids A and B at 80°C is no more than 1500cP (centipoise).

The reference teaches that plasticizers conventionally used in polyurethane chemistry are employed, for example, phthalates, aliphatic dibasic acid esters, glycol esters, fatty acid esters, phosphates, and mixtures of two or more thereof. Specific mention is made of dimethylphthalate, diethylphthalate, diisobutylphthalate, dibutyl phthalate, diheptylphthalate, di-2-ethylhexylphthalate, diisooctylphthalate, di-n-octylphthalate, dinonylphthalate, diisodecylphthalate, ditridecylphthalate, dicyclohexylphthalate, diisodecyl succinate, dioctyl adipate, diisodecyl adipate, dioctyl azelate, dibutyl sebacate, dioctyl sebacate, dioctyl tetrahydrophthalate, diethylene glycol dibenzoate, dipentaerythritolhexaester, pentaerythritol ester, butyl oleate, methyl acetyl ricinoleate, chlorinated fatty acid methyl, methoxychlorinated fatty acid methyl, tricresyl phosphate, trioctyl phosphate, octyldiphenyl phosphate, triphenyl phosphate, trichloroethyl phosphate, and cresyldiphenyl phosphate. Of these, preferred are phthalates and aliphatic dibasic acid esters, and particularly preferred are

esters substituted by an alkyl group having no more than eight carbon atoms.

Not one of these plasticizers reads on the plasticizers of the present claims.

It is submitted that none of the secondary references, either alone or in combination, supplement the deficiencies of the primary reference discussed above to render the present invention unpatentable.

Singh et al. discloses a low-free toluene diisocyanate prepolymer formed by reaction of a blend of the dimer of 2,4-toluene diisocyanate and an organic diisocyanate, preferably isomers of toluene diisocyanate, with high molecular weight polyols and optional low molecular weight polyols. The prepolymer can be further reacted with conventional organic diamines or organic polyol curatives to form elastomeric polyurethane/ureas or polyurethanes.

Rizk et al. discloses a polyisocyanate prepolymer composition comprised of the reaction product of (a) a polyisocyanate having an average functionality of at least 2 and containing at least about 20 percent by weight of a diisocyanate monomer, (b) a monohydric alcohol and (c) a polyol having an average hydroxyl functionality of at least about 1.8 to at most about 3.2 wherein the prepolymer composition has (i) an amount of isocyanate groups by weight sufficient to react with water in the absence of a supplemental blowing agent to make a foam, (ii) at most about 10.0 percent by weight of the diisocyanate monomer and (iii) an amount of the polyisocyanate that is capped by the monohydric alcohol sufficient to prevent gelling of the prepolymer composition. The prepolymer composition may be reacted with water to form a polyurethane foam.

Peter discloses a polyurethane elastomer possessing high resilience and high clarity

obtained by subjecting to polyurethane elastomer-forming conditions a polyurethane elastomer-forming reaction mixture comprising: a) an isocyanate selected from the group consisting of diphenyl methane diisocyanate, isocyanate obtained from the reaction of polyol with MDI and mixtures thereof; b) at least one polyol; and, c) at least one diol chain extender of the general formula: $\text{HO}-(\text{CH}_2)_x-\text{OH}$ wherein x is an integer from 5 to about 16.

Gabbard et al. discloses a flexible plasticized polyurethane foam in which water is used as the foaming agent and a plasticizer selected from phthalate, phosphate ester and benzoate plasticizers is added to improve the softness and flexibility of the polyurethane.

The Examiner has acknowledged that the primary reference is silent with respect to dimethylthiotoluene diamine curing agent and specifically claimed plasticizers, such as isodecyl diphenyl phosphate, butyl benzyl phthalate, and tributoxyethyl phosphate, but has taken the position that it would be obvious to incorporate the curing agent and plasticizers of the secondary references within the compositions of the primary reference, because it has been held that it is prima facie obvious to utilize a known component for its known function.

Here, the Examiner has employed impermissible hindsight. Applicants' invention provides compositions that are moldable and curable *under ambient conditions* by the nonobvious selection of a specific combination of ingredients, and in particular, the selection of a particular class of plasticizers. The disclosures in JP 6-16767 and the secondary references are very general, and the function of the plasticizers in these references appears to be entirely conventional. No specific properties are sought from the plasticizers used in these references, nor is there any indication that any particular plasticizer or group of plasticizers

would have any particularly useful properties (such as minimizing distortion). Moreover, there is nothing in either the primary or secondary references to suggest a combination of components that would result in a composition capable of being cast and cured under ambient conditions. Any of a vast range of curing agents and plasticizers available in the prior art *could be* incorporated into the composition of JP 6-16767, but there is no indication anywhere in the prior art as to *which* curing agents and plasticizers, or indeed whether *any* particular combination of curing agent and plasticizer would result in the highly desirable properties of castability and curability under ambient conditions, as well as distortion control.

In particular, with regard to the isodecyl diphenyl phosphate of the present claims, it is the Applicants' position that plasticizers containing branched chain groups confer unexpected and superior properties to the compositions of the invention compared to plasticizers containing straight chain alkyl groups. This selection is intimately connected with the claim limitation that the plasticizer must have a vapor pressure of less than 100 mPa at 25°C. Compounds containing long-chain branched alkyl groups have a vapor pressure lower than compounds containing corresponding straight-chain alkyl groups. The cited art does not disclose or suggest the importance of vapor pressure in the selection of a phosphate plasticizer, nor the value of selecting phosphates containing branched-chain alkyl groups rather than straight-chain alkyl groups. Further, and more particularly, the reference makes no mention of the use of *isodecyl*diphenyl phosphate of the claims and, in fact, leads away from its use by the teaching on page 5 that particularly preferred are esters substituted by an alkyl group *having no more than eight carbon atoms*.

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Accordingly, it is requested that the rejection of claims 20-26, 28, 30-32, 37, 38, 40, 44, 46-48, and 50 under 35 U.S.C. 103(a) as being unpatentable over JP 6-16717 in view of Singh et al. and further in view of Rizk et al., Peter, and Gabbard et al. be withdrawn.

In view of the foregoing, it is submitted that this application is now in condition for allowance and an early Office Action to that end is earnestly solicited.

Respectfully submitted,

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